

Type of Need Dictionary

The following describes each type of need from List 1 in the *Lists of Codes*. The “possible components” column provides the general scope of projects. It is not intended to be an all-encompassing list but rather it conveys the spectrum of possible elements of a given project. Some projects using a particular code may include all of the elements listed; others may include only some of the items.

Assume all projects include installation, engineering design, and contingency costs and all treatment projects include waste-stream handling, if appropriate. Also assume projects for complete treatment plants, wells, finished water storage, and pump stations include security components (such as fencing, among others).

Types of Need shown as strike-out text are not applicable to the 2015 DWINSA but may appear in 2011 DWINSA data.

An asterisk (*), indicates projects accepted for the 2011 DWINSA must have project-specific validation for the 2015 DWINSA. Projects without an (*) that are not changed from the 2011 survey can be documented by simple statement that the project is still needed and is within the same scope as submitted for the 2011 DWINSA. If you changed information, please provide a short explanation.

<i>RAW / UNTREATED WATER SOURCE</i>						
Code	Type of Need	Possible Components	Parameters required for Modeling Cost	Required Documentation		
				New	Replacement	Rehabilitation
R1	Well	Siting, drilling, and developing a well to completion including installation of a pump and appurtenances such as sample tap, meter, air release, pressure gauge, shut-off valve, electrical controls and limited discharge piping. Includes security.	Design capacity in MGD.	Weight of evidence (*) • Substantial portion not for growth • Specific deficiency discussed	Weight of evidence (*) • Age, condition, history • Specific deficiency discussed	Weight of evidence(*) • Age, condition, and history
R2	Well Pump	Pump and electrical controls.	Design capacity in MGD.	Weight of evidence (*) • Substantial portion not for growth • Specific deficiency discussed	All forms of documentation accepted.	

RAW / UNTREATED WATER SOURCE						
Code	Type of Need	Possible Components	Parameters required for Modeling Cost	Required Documentation		
				New	Replacement	Rehabilitation
R3 ¹	Well House	Site work, slab, building structure sized to accommodate on-site disinfection. Projects may include construction of a small building or more elaborate facilities with a chemical feed room with ventilation, etc. Does not include disinfection or treatment. Includes security.	N/A (A unit cost will be assigned)	Weight of evidence <ul style="list-style-type: none"> • Clear indication of need (inadequate security, well appurtenances housing, etc.) • For well fields, clear indication of why fencing is inadequate 	Weight of evidence <ul style="list-style-type: none"> • Actual age, condition, and history of well houses in the system 	
R4 ¹	Eliminate Well Pit	Extend casing, install pitless adapter, modify piping connections, fill pit, grade site. Does not include well house.	N/A (A unit cost will be assigned)	Accepted with all forms of documentation.	N/A	
R5 ¹	Abandon Well	Fill casing with appropriate material, cap well.	N/A (A unit cost will be assigned)	Accepted with all forms of documentation.	N/A	
R6	Aquifer Storage and Recovery Well	Wells used to inject water into an aquifer for later recovery and use as a source of drinking water. [Wells used only for aquifer recharge without subsequent recovery from the same wellhead are not included in the DWINSA.] Components may include well construction, pump, appurtenances, and limited transmission main. Includes security.	Design capacity in MGD.	Weight of evidence (*) <ul style="list-style-type: none"> • Independent Documentation Required • Substantial portion not for growth • Specific deficiency discussed 	Weight of evidence (*) <ul style="list-style-type: none"> • Age, condition, history • Specific deficiency discussed 	Weight of evidence (*) <ul style="list-style-type: none"> • Age, condition, history

RAW / UNTREATED WATER SOURCE						
Code	Type of Need	Possible Components	Parameters required for Modeling Cost	Required Documentation		
				New	Replacement	Rehabilitation
R7	Surface Water Intake	Intake structure, piping, valves; does not include pumps or impoundment structures. May include a wet well (small storage tank for raw water to be pumped to the treatment plant).	Design capacity in MGD.	Weight of evidence (*) • Independent Documentation Required • Substantial portion not for growth • Specific deficiency discussed	Weight of evidence (*) • Age, condition, history • Specific deficiency discussed	Weight of evidence (*) Age, condition, history
R8	Raw Water Pump	Pump and electrical controls.	Design capacity in MGD.	Weight of evidence (*) • Substantial portion not for growth • Specific deficiency discussed	All forms of documentation accepted	
R9	Off-Stream Raw Water Storage	Storage basin off the stream channel, constructed as a part of the treatment process, providing no more than 3 days detention time. Purpose is to address water quality issues, not water quantity issues.	Cost must be provided.	Weight of evidence (*) • Independent Documentation Required • Specific deficiency discussed • Cost estimate required	All forms of documentation accepted (cost estimate required) (* Did the project start?)	
R10	Spring Collector	Spring box or other collection device, including overflow, meter, sample tap, valves, and limited piping connection to a transmission main. Assume gravity flow; does not include pumps.	Design capacity in MGD.	Weight of evidence (*) • Substantial portion not for growth • Specific deficiency discussed	Weight of evidence (*) • Age, condition, history • Specific deficiency discussed	Weight of evidence (*) • Age, condition, history
R11 ¹	De-stratification	Some method of water circulation or aeration of a raw water source to avoid stratification of the water body.	Cost must be provided.	Accepted with all forms of documentation.		

TREATMENT - DISINFECTION						
Code	Type of Need	Possible Components	Parameters required for Modeling Cost	Required Documentation		
				New	Replacement	Rehabilitation
T1	Chlorination	Gas or hypochlorite system with chemical mixing and injection systems, and safety-related components. Does not include gas scrubber.	Capacity of the plant in MGD.	Weight of evidence(*) • Independent Documentation Required • Specific deficiency discussed • Not for new/recent regulation	All forms of documentation accepted	
T2	Chloramination	Chemical mixing and injection systems and safety-related components. Does not include gas scrubber.	Capacity of the plant in MGD.			
T3	Chlorine Dioxide	Chemical mixing and injection systems and safety-related components.	Capacity of the plant in MGD.			
T4	Ozonation	Ozone generation and injection equipment, off-gas controls, and related safety equipment.	Capacity of the plant in MGD.			
T5	Mixed Oxidant Type Equipment	Disinfectant generation equipment, injection system, and safety-related components.	Capacity of the plant in MGD.			
T6	Ultraviolet Light Disinfection	UV lights, pipes, valves, controls, and intensity monitors.	Capacity of the plant in MGD.			
T7	Contact Basin for CT	Baffled clearwell-type contact tank with overflow, drain, and access (if appropriate); or serpentine piping for contact time. Includes valves.	Volume in MG.			
T8	Dechlorination of Treated Water	Chemical mixing and injection system, on-line chlorine residual monitoring equipment.	Capacity of the plant in MGD.			
T9	Chlorine Gas Scrubber	Gas scrubber equipment, installation, and monitoring equipment with alarms.	Capacity of the plant in MGD.			

TREATMENT – COMPLETE PLANTS (surface or ground water)								
Code	Type of Need	Possible Components	Parameters required for Modeling Cost	Required Documentation				
				New	Expansion/ Upgrade	Replacement	Rehabilitation	
T10	Conventional Filter Plant (complete plant)	Complete conventional plant with flocculation, sedimentation, filtration, and waste handling. Includes raw water and finished water pumps, meters, chemicals and mixing, unit processes, clearwell, disinfection, waste handling, security, and controls. This code will also be used for systems using contact adsorption clarifier (CAC) technologies for the flocculation/sedimentation process.	Design capacity in MGD.	Weight of evidence (*) • Independent Documentation Required • Substantial portion not for growth • Specific deficiency discussed				All forms of documentation accepted
T11	Direct or In-line Filter Plant (complete plant)	Complete direct or in-line filtration plant, including raw water and finished water pumps, meters, chemicals and mixing, unit processes, clearwell, disinfection, waste handling, security, and controls. This code is also used for pressure filtration systems.	Design capacity in MGD.					
T12	Slow Sand Filter Plant (complete plant)	Complete plant including filters, raw water and finished water pumps meters, clearwell, disinfection, security, and controls.	Design capacity in MGD.					
T13	Diatomaceous Earth Filter Plant (complete plant)	Complete plant and building including raw water and finished water pumps, meters, chemical and body-feed equipment, mixing and injection, filters, backwash equipment, disinfection, clearwell, waste handling, security, and controls.	Design capacity in MGD.					

TREATMENT – COMPLETE PLANTS (surface or ground water)							
Code	Type of Need	Possible Components	Parameters required for Modeling Cost	Required Documentation			
				New	Expansion/ Upgrade	Replacement	Rehabilitation
T14	Membrane Technology for Particulate Removal (complete plant)	Complete plant including pre-filtration, membrane filtration equipment, waste-stream handling, raw water and finished water pumps, meters, disinfection, monitoring equipment, clearwell, security, and controls. Also may include caustic and other cleaning-chemical feed components.	Design capacity in MGD.	Weight of evidence (*) • Independent Documentation Required • Substantial portion not for growth • Specific deficiency discussed			All forms of documentation accepted
T15	Cartridge or Bag Filtration Plant (complete plant)	Complete plant including connective piping, filter housing, raw water and finished water pumps, meters, disinfection, clearwell, controls, security, and monitoring equipment.	Design capacity in MGD.				
T16	Lime Softening (complete plant)	Complete lime softening plant including raw water and finished water pumps, meters, chemicals and mixing, unit processes, clearwell, disinfection, waste handling, security, and controls.	Design capacity in MGD.				
T17	Reverse Osmosis (complete plant)	Complete plant including pre-filtration, membrane filtration equipment, waste-stream handling, raw water and finished water pumps, meters, monitoring equipment, disinfection, clearwell, security, and controls. Also may include cleaning components.	Design capacity in MGD.				
T18	Electrodialysis (complete plant)	Complete electrodialysis plant including raw water and finished water pumps, meters, disinfection, clearwell, waste handling, security, and controls.	Design capacity in MGD.				

TREATMENT – COMPLETE PLANTS (surface or ground water)							
Code	Type of Need	Possible Components	Parameters required for Modeling Cost	Required Documentation			
				New	Expansion/ Upgrade	Replacement	Rehabilitation
T19	Activated Alumina (complete plant)	Complete activated alumina plant including raw water and finished water pumps, meters, disinfection, clearwell, security, and controls.	Design capacity in MGD.	Weight of evidence (*) • Independent Documentation Required • Substantial portion not for growth • Specific deficiency discussed			All forms of documentation accepted
T20	Manganese Green Sand (complete plant)	Complete plant including raw water and finished water pumps, meters, waste-stream handling, monitoring equipment, chemical feed, disinfection, clearwell, security, and controls.	Design capacity in MGD.				
T21	Ion Exchange (complete plant)	Complete ion exchange treatment plant including raw water and finished water pumps, meters, disinfection, clearwell, waste handling, security, and controls.	Design capacity in MGD.				
T22	Groundwater Chemical-feed (complete plant)	Complete chemical-feed treatment plant including building, meters, disinfection, security, and controls. May also include corrosion control, fluoridation, and sequestration. Does not include well pump(s), contact time, or high service pumps.	Design capacity in MGD.				
T23	Iron Adsorption (complete plant)	Complete iron adsorption plant (iron-based media – not iron removal) including raw water and finished water pumps, meters, disinfection, clearwell, waste handling, security, and controls.	Design capacity in MGD.				
T24	Aeration (complete plant)	Complete aeration treatment plant including raw water and finished water pumps, meters, complete aeration facility, disinfection, clearwell, security, and controls.	Design capacity in MGD.				

TREATMENT – Other Components/Equipment/Processes						
Code	Type of Need	Possible Components	Parameters required for Modeling Cost	Required Documentation		
				New	Replacement	Rehabilitation
T30	Zebra Mussel Control	Chemical mixing and injection of oxidant at raw water intake.	Capacity of the plant in MGD.	Weight of evidence(*) • Independent Documentation Required • Specific deficiency discussed • Not for new/recent regulation	All forms of documentation accepted	
T31	Corrosion Control	Chemical mixing and injection system. Does not include disinfection.	Capacity of the plant in MGD.			
T32	Powdered Activated Carbon	PAC handling facility, chemical feeders, and safety equipment.	Capacity of the plant in MGD.			
T33	Aeration	Complete packed tower or counter-current tower aeration facility including disinfection, or cascading-type tray aeration.	Capacity of the plant in MGD.			
T34	Sequestering for Iron and/or Manganese	Chemical mixing and feed system, injection system. Does not include disinfection.	Capacity of the plant in MGD.			
T35	Chemical Feed	Chemical handling equipment, mixers, injection systems, and limited piping. Includes in-line mixers, chemical injectors, chemical diffusers, and other rapid-mix technologies.	Capacity of the plant in MGD.			
T36	Chemical Storage Tank	Tank only. Use other codes as needed for chemical mixing and injection systems.	Cost must be provided.			
T37	Fluoride Addition	Chemical mixing and injection system.	Capacity of the plant in MGD.			
T38	Pre-sedimentation Basin	Presedimentation basin, including any required berms, walls, chemical feed equipment, and on-site sludge removal equipment.	Capacity of the plant in MGD. (not volume of basin in MG)			

TREATMENT – Other Components/Equipment/Processes						
Code	Type of Need	Possible Components	Parameters required for Modeling Cost	Required Documentation		
				New	Replacement	Rehabilitation
T39	Sedimentation/ Flocculation	Sedimentation basin (including lamella plates, tube settlers, etc.), flocculation basin with flocculators, sludge removal, and necessary valves. May also include Contact Adsorption Clarifier unit process.	Capacity of the plant in MGD.	Weight of evidence(*) • Independent Documentation Required • Specific deficiency discussed • Not for new/recent regulation	All forms of documentation accepted	
T40	Granular Activated Carbon	GAC filter media with or without underdrains, backwash system, air scour or surface wash, and effluent troughs. Does not include regeneration facility. Includes GAC caps for filters and carbon columns.	Capacity of the plant in MGD.			
T41	Membrane Filters	Complete filters including membrane, pumps, and backwash equipment.	Capacity of the plant in MGD.			
T42	Media Filters	Complete filters including media, air scour and/or surface wash, underdrain, effluent troughs, and backwash equipment.	Capacity of the plant in MGD.			
T43	Waste Handling/ Treatment: Mechanical	Mechanical treatment plant including sludge handling/drying equipment.	Capacity of the plant in MGD.			
T44	Waste Handling/ Treatment: Non-mechanical or Connection to a Sanitary Sewer	Ponds or lagoons for storing, recycling, and/or evaporating process wastewater; or lift station and force main or gravity main to sanitary sewer.	Capacity of the plant in MGD.			
T45	Type of Treatment Unknown	Use this code when treatment is necessary but the type of treatment to be applied is unknown. The State or EPA will assign a treatment type based on Best Available Treatment (BAT) technologies for the contaminant of concern.	Capacity of the plant in MGD.			N/A

<i>TREATMENT – Other Components/Equipment/Processes</i>						
Code	Type of Need	Possible Components	Parameters required for Modeling Cost	Required Documentation		
				New	Replacement	Rehabilitation
T46	Other	Use if none of the other treatment codes apply. Please include an explanation of the type of treatment.	Cost must be provided.	Weight of evidence(*) • Independent Documentation Required • Specific deficiency discussed • Not for new/recent regulation	All forms of documentation accepted (cost estimate required)	

TRANSMISSION and DISTRIBUTION

Code	Type of Need	Possible Components	Parameters required for Modeling Cost	Required Documentation		
				New	Replacement	Rehabilitation
X1	Raw Water Transmission	Mains, trenching, bedding, backfill, site work, easements, typical road repair, control valves, air release valves.	Pipe diameter (in inches) and pipe length (in feet).	Weight of evidence(*) • Independent Documentation Required • Substantial portion not for growth • Specific deficiency discussed	All forms of documentation within 10% limit (*) Independent documentation required over 10% limit (*) If any project relies on survey-generated documentation, the total system-wide rehab and replacement rate may not exceed 10% for the 20-year period	
X2	Finished Water Transmission	These codes are used for any mains that transport raw water to the treatment plant, or treated water from the plant to the distribution system grid. Includes mains, trenching, bedding, backfill, site work, easements, typical road repair, control valves, air release valves.	Pipe diameter (in inches) and pipe length (in feet).			
M1	Distribution Mains	This code should be used for any mains that transport water through a piping grid serving customers. Includes mains, trenching, bedding, backfill, hydrants, valves, site work, road repair, easements, and service leads from the main to the curb stop. Does not include "transmission mains."	Pipe diameter (in inches) and pipe length (in feet).			
M2	Lead (Pb) Service Line Replacement	Service lines from the curb-stop to the building.	Number of service lines.	N/A	All forms of documentation accepted. (* Update the number needed)	N/A

TRANSMISSION and DISTRIBUTION

Code	Type of Need	Possible Components	Parameters required for Modeling Cost	Required Documentation		
				New	Replacement	Rehabilitation
M3	Service Lines (other than lead service lines)	Service lines from the curb-stop to the building.	Number of service lines.	All forms of documentation accepted (*) (statement of system's responsibility required if for service lines between the curb stop and the building; statement that not included in pipe projects if from pipe to the curb stop) • Weight of evidence if replacing over 10% of service lines (*)		Rehabilitation not allowed – considered O&M
M4 ¹	Hydrants	Hydrant lead to the transmission or distribution main, drain, hydrant, and auxiliary valve.—	Number of hydrants and diameter (in inches).	Weight of evidence • Age, condition, and history of replacement (e.g., annual replacement program) if over 10% of existing hydrants or significant amount of new installation. • Clear indication not included in pipe projects.		Rehabilitation not allowed – considered O&M
M5	Valves	Includes purchase price of the butterfly, ball, air release, or other related valve and installation.	Number of valves and diameter (in inches).	Weight of evidence (*) • Clear indication not included in pipe • Specific deficiency and history of replacement if over 10% of existing or significant amount of new		Rehabilitation not allowed – considered O&M
M6	Control Valves	Includes pressure reducing valves (PRVs), flow control, filter effluent control valves, and altitude valves.	Number of valves and diameter (in inches).	All forms of documentation accepted		
M7	Backflow Prevention Devices/ Assemblies	Testable backflow device or assembly, such as a reduced pressure zone assembly or double check valve assembly. Includes ball or gate valves. Do not use for dual check valves.	Number of assemblies and diameter (in inches).	All forms of documentation accepted (*) • Weight of evidence if significant amount of new backflow (*)		Rehabilitation not allowed – considered O&M

TRANSMISSION and DISTRIBUTION

Code	Type of Need	Possible Components	Parameters required for Modeling Cost	Required Documentation		
				New	Replacement	Rehabilitation
M8	Water Meters	Individual domestic or industrial units of either manual or remote read-methods. Includes meter box and all necessary plumbing (e.g., dual check valve, small pressure regulators), and computer costs for automated systems.	Number of meters, and diameter (in inches - converted to a decimal for data entry).	Weight of evidence if more than one meter per connection • All forms of documentation accepted if \leq 1 meter per connection		Rehabilitation not allowed – considered O&M

FINISHED / TREATED WATER STORAGE						
Code	Type of Need	Possible Components	Parameters required for Modeling Cost	Required Documentation		
				New	Replacement	Rehabilitation
S1	Elevated/ Finished Water Storage	Complete elevated storage facility with appurtenances such as security, altitude valves, and isolation valves.	Volume in MG.	Weight of evidence (*) • Independent Documentation Required • Substantial portion not for growth/fire • Specific deficiency discussed	Weight of evidence (*) • Age, condition, history of tank • Specific deficiency discussed	All forms of documentation accepted
S2	Ground-level Finished/ Treated Water Storage	Complete ground level storage facility with appurtenances such as security, altitude valves, and isolation valves.	Volume in MG.			
S3	Hydro-pneumatic Storage	Complete hydropneumatic storage tank and recharge/control system, security, and building (for larger installations).	Volume in MG.	Weight of evidence (*) • Substantial portion not for growth • Specific deficiency discussed	All forms of documentation accepted	
S5	Cover for Existing Finished/ Treated Water Storage	Construction of a cover on an existing finished/treated water storage tank. Includes rehab of the tank.	Volume of the tank in MG.	All forms of documentation accepted (includes rehab of the tank) (* Did the project start?)		N/A

PUMPING STATION AND PUMPS						
Code	Type of Need	Possible Components	Parameters required for Modeling Cost	Required Documentation		
				New	Replacement	Rehabilitation
P1	Finished Water Pumps	Pump and electrical controls.	Capacity in MGD.	Weight of evidence (*) • Substantial portion not for growth • Specific deficiency discussed	All forms of documentation accepted	
P2	Pump Station	Booster or Raw Water. Includes clearwell, pumps, security, and building.	Capacity in MGD.	Weight of evidence (*) • Independent Documentation Required • Substantial portion not for growth or fire • Specific deficiency discussed	Weight of evidence (*) • Age, condition, history of pump station or system	All forms of documentation accepted

OTHER INFRASTRUCTURE NEEDS

Code	Type of Need	Possible Components	Parameters required for Modeling Cost	Required Documentation		
				New	Replacement	Rehabilitation
W4 ¹	Laboratory Capital Costs	Limited to laboratory equipment, buildings, and facilities owned by the system.	Cost of equipment and facility must be provided.	All forms of documentation accepted		Rehabilitation not allowed – considered O&M
W2	Computer and Automation Costs (SCADA)	System-wide computer control systems and SCADA control systems. Does not include computer software.	Total population served (on front cover of questionnaire)			
W3 ¹	Pump Controls/ Telemetry	Basic telemetry system of telephone-wire based signals or radio signal controls. Does not include SCADA systems (use W2 for SCADA).	Total population served (on front cover of questionnaire)			
W4	Emergency Power	Standby power generators including on-site and movable units with associated fuel tanks.	Kilowatts or horsepower must be provided.	Weight of evidence (*) • Clear indication of need (necessary to operate critical infrastructure to maintain pressure and provide water)	All forms of documentation accepted	Rehabilitation not allowed – considered O&M
W5 ¹	Security: Fencing	Project necessary to improve or maintain physical fortification such as walls, fences, gates, security lights, manhole locks, other locks, etc.	Linear feet of fencing in feet.	Weight of evidence • Specific deficiency (inadequately secured infrastructure, etc.) • Reasonable lengths • Clear indication security is not included as a component of other projects	Weight of evidence • Specific deficiency (condition of existing fence, etc.) • Clear indication security is not included as a component of other projects	Rehabilitation not allowed – considered O&M.

OTHER INFRASTRUCTURE NEEDS						
Code	Type of Need	Possible Components	Parameters required for Modeling Cost	Required Documentation		
				New	Replacement	Rehabilitation
W6 ¹	Security: Physical	Project necessary to improve or maintain physical fortification such as walls, fences, gates, security lights, manhole locks, other locks, etc.	Cost must be provided.	Weight of evidence (*) • System-specific cost estimate required		Rehabilitation not allowed – considered O&M.
W7 ¹	Security: Electronic / Cyber	Project provides some form of electronic security such as a computer firewall, closed circuit television, or an alarm system (for security purposes).	Cost must be provided.			
W8 ¹	Security: Monitoring Tools	Project provides monitoring equipment used to detect anomalies in the process streams or finished water for security purposes, not for general water quality purposes.	Cost must be provided.			
W9 ¹	Security: Other Security	Items not covered under W5 - W7 that are related to plant or system security.	Cost must be provided.			
W10	Other	Includes needs for which none of the other type of need codes apply (examples include a berm to protect a pump station at risk from flooding or elevating an emergency power generator). Please include an explanation.	Cost must be provided.			

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